Inzhenerno-Fizicheskii Zhurnal 2001 vol.74 N3, pages 41-43

Mathematical simulation of the process of dispersion of clays in filtration of solutions through slightly permeable clay rocks

Khramchenkov M.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Based on concepts of the process of dispersion of clays, the author developed a model of the change in the filtrational properties of slightly permeable clay rocks in filtration through them of solutions with a composition different from the initial composition. Of primary importance here are two processes, i.e., the porosity increase due to dispersion of a part of the porous collector and the increase in the viscosity of the resulting suspension. It is clear that these two processes oppositely affect the filtration factor. In the present work, the dynamics of the influence of these processes on the filtration factor is tracked and the exact analytical solution for the nonstationary problem in a one-dimensional case is obtained.